

Preliminary TM-1681
September 18, 1990

Mechanical Safety Subcommittee Guidelines for Structural Bolting at Fermilab

by: Jeffrey L. Western

1. INTRODUCTION

This guideline specifies the usage of structural bolts in terms of their design, selection and application at Fermilab as determined by the Mechanical Safety Subcommittee (MSSC).

2. SCOPE

2.1 The guideline will encompass structural bolting which fall under the scope of American Institute of Steel Construction (AISC). "Manual of Steel Construction ", Latest Edition.

2.2 This guideline is to be applied to the use of bolts whenever the failure of a bolt may present a hazard to personnel or equipment.

2.3 Mechanical bolting excluded from this guideline but included in the Fermilab Safety Manual are; room temperature pressure vessels (5031), cryogenic dewars (5032), and vacuum pressure vessel safety (5033).

3. GUIDELINES

3.1 Structural bolting shall conform to the standard specifications as specified in AISC " Manual of Steel Construction ", Latest Edition.

3.2 Bolts that are designated for support application shall follow AISC provisions for allowable, minimum, and maximum stresses.

3.3 Referenced Technical Memos:

- a) TM-1662: Guidelines for Structural Bolting in accordance with AISC Eighth Edition "Manual of Steel Construction"
- b) TM-1664: Guidelines for Structural Bolting in accordance with AISC Ninth Edition "Manual of Steel Construction"

3.4 Bolts shall be selected and manufactured in accordance with the guidelines as specified by the Industrial Fasteners Institute (IFI), "Fastener Standards", Latest Edition.

3.5 All bolts used shall have identification or grade marks as specified by the American Society for Testing and Materials (ASTM), the Society of Automotive Engineers (SAE), or the International Organization for Standardization (ISO), as identified by IFI guidelines.

3.6 Bolts not having identification shall not be used, unless material verification has been obtained.

3.7 Bolts that are to be subjected to cryogenic temperatures shall be verified to be workable and usable under those conditions.

3.8 Washers and nuts shall be of the same material as the bolting material, unless compatibility of different materials can be demonstrated.

4. RESPONSIBILITY

4.1 The Project Engineer and the Group Leader or Reviewer shall be responsible for guideline compliance. They shall be responsible for ensuring proper bolt documentation and installation in accordance with AISC regulations.

4.2 The MSSC shall serve as consultants on bolting as requested.

Distribution

LSC Members

Division/Section Heads

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Mechanical Safety Subcommittee



Fermilab

RECEIVED

DEC 27 1990

Safety Section

December 21, 1990

To: Don Cossairt

From: Kurt Krempetz

Subject: Mechanical Safety Subcommittee Bolting Guidelines

Enclosed is a copy of the Mechanical Safety Subcommittee Guidelines for Structural Bolting at Fermilab. The Mechanical Safety Subcommittee would like to see this placed in the new restated system of Safety Notes or some other similar system as described in the November LSC meeting.

cc: D. Theriot